WHAT IS CLAIMED IS:

1. A method for producing an amorphous alloy ribbon by ejecting an alloy melt onto a cooling roll and rapidly quenching it, comprising grinding said cooling roll while supplying a gas based on CO_2 near a paddle of said alloy melt ejected onto said cooling roll.

2. The method for producing an amorphous alloy ribbon according to claim 1, wherein the grinding of said cooling roll is carried out with a brush.

3. The method for producing an amorphous alloy ribbon according to claim 1, wherein an alloy melt comprising 13 atomic % or less of B and 15 atomic % or less of at least one selected from the group consisting of transition elements of Groups 4A, 5A and 6A, the balance being substantially Fe, is ejected onto said cooling roll and rapidly quenched.

4. The method for producing an amorphous alloy ribbon according to claim 1, wherein said alloy melt contains 3 atomic % or less of at least one of Cu, Ag and Au.

5. The method for producing an amorphous alloy ribbon according to claim 1, wherein said gas based on CO_2 starts to be supplied near a paddle of said alloy melt after the surface temperature of said cooling roll has become substantially constant.

6. The method for producing an amorphous alloy ribbon according to claim 1, wherein said ribbon is cast under the conditions that the peripheral speed of said cooling roll is 35 m/second or less, that the temperature of said melt is from the melting point of its alloy + 50°C to the melting point of its alloy + 250°C, and that a distance between a tip end of a melt-ejecting nozzle and said cooling roll is 200 μm or less.

7. The method for producing an amorphous alloy ribbon according to claim 6, wherein the peripheral speed of said cooling roll is 20-30

m/second.

8. The method for producing an amorphous alloy ribbon according to claim 1, wherein an amorphous alloy ribbon having a thickness of 8-25 μm is produced.

9. A method for producing an amorphous alloy ribbon by ejecting an alloy melt onto a cooling roll and rapidly quenching it, comprising (a) preparing an alloy melt having a composition comprising 13 atomic % or less of B and 15 atomic % or less of at least one selected from the group consisting of transition elements of Groups 4A, 5A and 6A, the balance being substantially Fe; (b) ejecting said alloy melt at a temperature from the melting point of said alloy + 50°C to the melting point of said alloy + 250°C through a nozzle onto said cooling roll rotating at a peripheral speed of 35 m/second or less, a distance between a tip end of said nozzle and said cooling roll being 200 μm or less; (c) starting to supply a gas based on CO_2 to said alloy melt after the surface temperature of said cooling roll has become substantially constant; and (d) grinding said cooling roll while supplying said gas based on CO_2.

10. A method for producing a nano-crystalline alloy ribbon comprising heat-treating said amorphous alloy ribbon recited in claim 1 at a temperature equal to or higher than the crystallization temperature of said alloy, to form nano-crystalline structure having an average particle size of 100 nm or less.